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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/086,339 | 02/28/2002 | Christopher J. Raymond | 31162-1007UT | 4112 |
| 5179 | 7590 | 12/22/2003 | EXAMINER | |
| PEACOCK MYERS AND ADAMS P C | | | ROSENBERGER, RICHARD A | |
| P O BOX 26927 | | | ART UNIT | |
| ALBUQUERQUE, NM 871256927 | | | PAPER NUMBER | |
| | | | 2877 | |

DATE MAILED: 12/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/086,339

Applicant(s)

RAYMOND, CHRISTOPHER J.

Examiner

Richard A Rosenberger

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1-26 is/are allowed.
- 6) ☒ Claim(s) 27, 29, 30, 33, 35, 37-40, 42, 43, 46, 48 and 50-52 is/are rejected.
- 7) ☒ Claim(s) 28,31,32,34,36,41,44,45,47 and 49 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) see letter. 6) ☐ Other: ____

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 27, 29, 30, 40, 42 and 43, and claims 33, 35, 37-39 as dependent from claims 27 and 29, and claims 46, 48, 50-52 as dependent from claims 40 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conrad et al (US 5,963,329).

The Conrad et al patent shows measuring lines profiles by directing light with a pluralities of wavelengths at the lines on a substrate, detecting the light scattered by the lines, and comparing intensities of the scattered light by model comparison; see the abstract, lines 8-21 which discusses the scattering of the light and model comparison. The use of an appropriate model for the particular lines being measured would have been obvious; when the lines are known to be asymmetrical the use of a model which includes such asymmetry would have clearly been obvious. The "stacked slab" model discussed in the reference in column 5, line 27-50 is directly extendable to asymmetrical line widths by allowing the slabs to be not necessarily centered upon the slab below it. The light is focused, and is thus "in general conical configuration" (claims 33 and 46). The device used in the Conrad et al patent measures spectral data, and is thus a "spectral scatterometer" (claims 35

and 48). The reference teaches detecting the zeroth order (column 5, line 5) (claims 37 and 50). It would have been obvious to use the results to control a manufacturing process when the results indicate the process is not performing optimally (claims 39 and 52).

3. Claims 1-26 appear to be allowable because the art does not teach or suggest the claimed use of complementary angles of reflection in analyzing light from an array of microelectronic features of a microelectronic device.

Claims 28, 31, and 32, claims 33-39 as dependent form claims 28 and claims 34 and 36 as dependent form claims 27 and 29; and claims 41, 44 and 45, claims 46-52 as dependent form claim 41 and claims 47 and 49 as dependent from claims 40 and contain allowable subject matter because the prior art does not teach or fairly suggest the subject matter of these claims. The Conrad et al reference teaches the use of multi-wavelength light, but does not teach or suggest using light of a single wavelength (claims 28 and 41). The Conrad et al reference does not teach also using phase comparison (claims 31 and 44) or a ratio of light magnitude and phase (claims 32 and 45). The Conrad reference does not teach or suggest making such measurements with an angular scatterometer (claims 34 and 47) nor decomposing backscattered light into S and P components (claims 36 and 49). These claims are objected to as being dependent upon unallowed parent claims, but would be

allowable were they rewritten in independent form including all of the limitations of there respective parent claims.

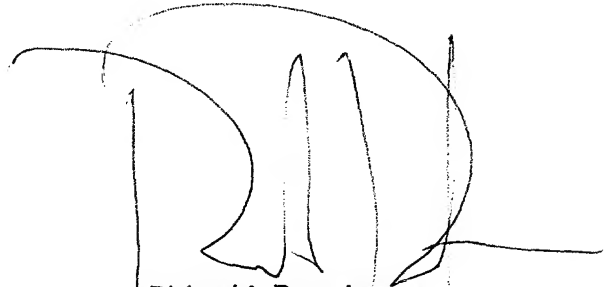
4. The documents listed on the Information Disclosure Statements filed 16 July 2002, 15 October 2002, and 02 June 2003 have been considered; initialed and signed copies of these statements are attached.

5. Papers related to this application may be submitted to Group 2800 by facsimile transmission. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The fax number is (703) 872-9306

Any inquiry concerning this communication or earlier communications from the examiner should be directed to R. A. Rosenberger whose telephone number is (703) 308-4804.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0956.

R. A. Rosenberger
12 December 2003



Richard A. Rosenberger
Primary Examiner